



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/313,184	05/18/1999	KANAME MIWA	Q54404	3561

7590

09/11/2003

SUGHRUE MION ZINN MACPEAK & SEAS PLLC  
2100 PENNSYLVANIA AVENUE N W  
WASHINGTON, DC 200373202

EXAMINER

TUNG, TA HSUNG

ART UNIT

PAPER NUMBER

1753

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/313,184

Applicant(s)

MIWA

1274L

Examiner

T. TUNG

Group Art Unit

1753

Paper No. 31

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 8-21-03
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 16-20, 22-24, 30-36 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 16-20, 22-24, 30-36 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

Art Unit: 1102

Claims 35, 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35 is not considered to be a proper dependent claim in that it does not structurally distinguishable from its parent claim 34. The amount of current flowing is not a structural distinction.

Claim 36, line 3, "sequentially arranged in layers" is vague. Does the expression mean that the three cells are stacked over each other, or are arranged in the same plane in a gas flow sequence? Clarification is required. For the purpose of this Office action, it is presumed that the applicant meant the former.

Claims 16-20, 22-24, 30-35 are rejected under 35 U.S.C. 102(a) as being anticipated by Kato et al 5,672,811.

As discussed in the March 12, 2002 Office action, Kato discloses a sensor comprising two chambers 6 and 8 formed between electrolyte substrates 4a and 4c, two porous Pt electrodes 28, 24 supported on one side of substrate 4c and means 30 for applying a voltage of 450 mV or 1.5 volts between the electrodes. Electrode 28 is shown to have an area at least twofold that of electrode 24 (see figures 2, 15, 21). From the symbol of the voltage applying means 30, electrode 28 would be the negative electrode. See col. 11, line 10 to col. 12, line 61; col. 18, line 46 to col. 19, line 4; particularly col. 12, line 14; col. 15, line 39; col. 18, lines 51-67 and col. 24, line 18.

Art Unit: 1102

In regard to claim 31, the polarity of an electrode is not considered to define any structural distinction. Thus, claim 31 would be met if one merely considers electrode 24 to be the negative electrode.

Applicant argues that Kato does not disclose in the description of the drawings what the widths of electrodes 28 and 24 are. Without the knowledge of the widths, there is no way to ascertain whether the areas of these electrodes have a ratio within the range claimed by applicant.

This argument is not persuasive. First, Kato does not in any way indicate that his electrodes are of varying widths. If they were, Kato presumably would have shown such a configuration in a figure. Second, it is clear from figure 1 of the patent that chambers 8 and 10 that house these electrodes are elongated. The widths of these chambers are substantially smaller than their lengths. The electrodes, then, can not extend any significant distance in a width direction, and any variance in the electrodes' widths would be quite small compared to the electrodes' lengths. Accordingly, the ratio of the electrodes' areas would still be within the 2:1 to 5:1 range claimed by applicant, even if the electrodes' widths varied.

In response to the examiner's rebuttal, applicant further argues that if electrodes 28 and 24 in Kato were of the configuration shown in a hypothetical figure 1 sketch attached to the August 21, 2003 pre-amendment, they would satisfy figure 2 of the patent but would not have any difference in their areas.

This further argument is also not persuasive. No reason is seen why electrode 28 would be arranged along the axis of the gas flow, while electrode 24 would be arranged perpendicularly

Art Unit: 1102

thereto. It may be possible to conjure up a configuration that would negate Kato as a reference, but the reference should be interpreted in a manner that one of ordinary skill in the art would reasonably interpret a reference. One of ordinary skill in the art would interpret the electrodes to be aligned similarly.

It is further noted that the Kato patent is commonly assigned as the instant application. Presumably, the patentees would be available to applicant to make a declaration or affidavit to the effect that electrodes 28 and 24 of the patent have an alignment or a configuration (or in some other manner) that causes the ratio of their areas not to be within the range claimed by applicant.

Claims 19, 20, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al '811.

If electrode 24 of Kato were construed not to be a negative electrode, these claims would differ in that respect.

The patent in figures 17 and 18 shows electrode 24 with an area more than twofold that of electrode 28. However, these electrodes are not on the same side of an electrolyte.

Figures 2 and 11-15 of the patent show electrodes 28 and 24 on the same side of an electrolyte. It would have been obvious to modify the embodiments of figures 17 and 18 by supporting these electrodes on the same side of an electrolyte in view of figures 2 and 11-15. There is no unexpected result. Same side would mean the elimination of an extra electrolyte, while opposite sides would decrease the overall lateral dimension of the sensor. Choosing one

Art Unit: 1102

over the other is a design choice within the skill of the art. Further, both configurations are well-known and indeed are shown within the four corners of the same patent.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al '811 in view of Yagi et al 5,348,630.

If the term "humidifier" in the preamble were somehow construed to be a structural distinction, this claim differs from Kato in that respect.

Yagi discloses the use of a zirconia solid electrolyte sensor for measuring humidity. See col. 3, lines 26-61. It would have been obvious for Kato to make his sensor into a humidity sensor in view of Yagi, since one of ordinary skill in the art would expect the Kato sensor to be a suitable humidity sensor.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato in view of Patrick et al 6,254,750.

This claim differs by calling for a first pump cell, an oxygen concentration cell and a second pump cell to be stacked on top of each other.

Patrick discloses three cells stacked over each other. See figure 3; col. 8, lines 14-36. It would have been obvious for Kato to locate the second pump cell on a separate electrolyte below the oxygen concentration cell in view of Patrick. This arrangement would provide a more compact sensor design with a reduced lateral dimension.

Claims 16-20, 22-24, 30-35 are rejected under 35 U.S.C. 102(a) as being anticipated by Japan 10-38845.

Art Unit: 1102

US 6,036,841 appears to be an English equivalent of Japan '845. US '841 is apparently commonly assigned with the instant application and is therefore barred as a reference under 35USC103 by way of 102(e) by the American Inventors Protection Act (AIPA), since the instant RCE application has a filing date subsequent to Nov. 29, 1999. Even though US '841 is available as a reference for a rejection under 102(e), some of applicant's claims are being rejected over this reference under 103. Therefore, for the sake of convenience, Japan '845 will be used as the basis for the rejections, while the discussion will be referred to the US equivalent.

Figures 2 and 7 of Japan disclose two chambers 2 and 9 with diffusion means 1 and 8. A first pump cell 6 in chamber 2, an oxygen concentration cell 12 in chambers 9 and 15, and a second pump cell 13 in chambers 9 and 15. Electrode 11 of the second pump cell has an area more than twofold the area of electrode 14 of the second pump cell, and both electrodes are on the same side of an electrolyte. There is means for applying 430-450 mV between electrodes 11 and 14. According to the symbol of the voltage source for the second pump cell, electrode 14 is the negative electrode. See col. 5, lines 9-64; col. 7, lines 26-48 and Table 1 in col. 8.

For claim 16, electrode 11 can be regarded as the negative electrode, since the polarity of an electrode is not a structural distinction.

As with Kato '811, Japan '845 also appears to be commonly assigned as the instant application. The patentee of Japan '845 presumably would be available to applicant to file a declaration or affidavit in support of applicant's position that electrodes 11 and 14 of the reference do not have the perceived difference in areas, if that were applicant's position.

Art Unit: 1102

Claims 16-18, 20, 22-24, 30, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan '845 in view of Kato et al '811.

If electrode polarity or an applied potential value were considered to be a proper apparatus limitation, these claims would differ by calling for the negative electrode to be larger than the positive electrode and for applying 1.1 to 2.5 volts between the electrodes.

Kato (figures 2, 11-15) discloses a negative electrode 28 larger than a positive electrode 24. Kato also discloses (col. 24, line 18) applying 1.5 volts between electrodes 28 and 24. It would have been obvious for Japan to adopt these features of Kato, since the incorporation of known features from analogous prior art is within the skill of the art in the absence of unexpected result.

As for claim 23, Kato renders obvious the use of Pt electrodes (see col. 12, line 15 and col. 18, lines 51 and 67).

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japan '845, with or without Kato et al '811, in view of Yagi et al.

This claim differs by calling for the sensor to be a humidity sensor. As discussed before, that is rendered obvious by Yagi.

Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japan '845 in view of Patrick et al.

This claim differs by calling for the three cells to be stacked on each other. As discussed before, that is rendered obvious by Patrick.



Art Unit: 1102

Claims 16-20, 22-24, 30-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al '811 or Japan '845 in view of Japan 61-97754.

Kato and Japan '845 have been previously discussed. Applicant's claims differ by calling for one electrode of a second pump cell to have an area more than twice the area of the other electrode in order to reduce the resistance between them.

According to applicant's IDS of Aug. 21, 2003, Japan '754 teaches providing one electrode of a cell to have an area different from that of the other electrode in order to reduce the resistance between them.

It would have been obvious for Kato or Japan '845 to provide a difference between the electrode areas of the second pump cell in view of Japan '754 so as to reduce the resistance between them. Lesser resistance means a higher sensing signal and a more accurate measurement.

A translation of Japan '754 has been ordered with the translation section of the USPTO. If applicant has such a translation, he should submit the same with his response in the event the ordered translation is not timely available.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al '811 or Japan '845 in view of Japan '754 and Yagi et al.

This claim further differs by calling for the sensor to be a humidity sensor. As discussed before, Yagi renders that obvious.


Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al '811 or Japan '845 in view of Japan '754 and Patrick et al.

Art Unit: 1102

This claim further differs by calling for the three cells to be stacked over each other. As discussed before, that is rendered obvious by Patrick.

Yamada et al 6,344,134 discloses a pump cell 6, an oxygen concentration cell 7 and a second pump cell 8 stacked over each other. The electrodes of the second pump cell are on the same side of an electrolyte. However, Yamada is apparently commonly assigned with the instant application and is therefore barred as a reference under 35USC103 by way of 102(e) by the AIPA.

The examiner can be reached at 703-308-3329. His supervisor Nam Nguyen can be reached at 703-308-3322. Any general inquiry should be directed to the receptionist at 703-308-0661. A fax number for TC 1700 is 703-872-9310.



Ta Tung

Primary Examiner

Art Unit 1753